

TABLE 4.3.RME  
VALUES USED FOR DAILY INTAKE CALCULATIONS  
REASONABLE MAXIMUM EXPOSURE  
The Dean Company

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Resident	Adult	Soil at Site 1	CS	Chemical Concentration in Soil	See Table 3.3	mg/kg	See Table 3.3	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR x FI x EF x ED x CF1 x 1/BW x 1/AT
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	
				FI	Fraction Ingested	1	--	Professional Judgment	
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	24	years	EPA, 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	70	kg	EPA, 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA, 1989	
				AT-N	Averaging Time - Non-Cancer	8,760	days	EPA, 1989	
		Child	Soil at Site 2	CS	Chemical Concentration in Soil	See Table 3.3	mg/kg	See Table 3.3	CDI (mg/kg-day) = CS x IR x FI x EF x ED x CF1 x 1/BW x 1/AT
				IR-S	Ingestion Rate of Soil	100	mg/day	EPA, 1991	
				FI	Fraction Ingested	1	--	Professional Judgment	
				EF	Exposure Frequency	350	days/year	EPA, 1991	
				ED	Exposure Duration	6	years	EPA, 1991	
				CF1	Conversion Factor	1E-06	kg/mg	--	
				BW	Body Weight	15	kg	EPA, 1991	
				AT-C	Averaging Time - Cancer	25,550	days	EPA, 1989	
				AT-N	Averaging Time - Non-Cancer	2,190	days	EPA, 1989	

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Ingestion (continued)	Resident (continued)	Child (continued)	Soil at Site 2	CS IR-S FI EF ED CF1 BW AT-C AT-N	Chemical Concentration in Soil Ingestion Rate of Soil Fraction Ingested Exposure Frequency Exposure Duration Conversion Factor Body Weight Averaging Time - Cancer Averaging Time - Non-Cancer	See Table 3.3 200 1 350 6 1E-06 15 25,550 2,190	mg/kg mg/day -- days/year years kg/mg kg days days	See Table 3.3 EPA, 1991 Professional Judgment EPA, 1991 EPA, 1991 -- EPA, 1991 EPA, 1989 EPA, 1989	CDI (mg/kg-day) = $CS \times IR \times FI \times EF \times ED \times CF1 \times 1/BW \times 1/AT$
Dermal	Resident	Adult	Soil at Site 1	CS CF SA AF ABS-d EV EF ED BW AT-C AT-N	Chemical Concentration in Soil Conversion Factor Skin Surface Area Available for Contact Soil to Skin Adherence Factor Dermal Absorption Factor Event Frequency Exposure Frequency Exposure Duration Body Weight Averaging Time - Cancer Averaging Time - Non-Cancer	See Table 3.3 1E-06 5,700 0.07 chemical-specific 1 350 24 70 25,550 8,760	mg/kg kg/mg cm <sup>2</sup> mg/cm <sup>2</sup> -event unitless events/day days/year years kg days days	See Table 3.3 -- EPA, 2001 EPA, 2001 EPA, 2001 EPA, 2001 EPA, 2001 EPA, 2001 EPA, 1991 EPA, 2001 EPA, 2001	Dermal Absorbed Dose (DAD) (mg/kg-day) = $DA\text{-event} \times EF \times ED \times EV \times SA \times 1/BW \times 1/AT$ where Absorbed Dose per Event (DA-event) (mg/cm <sup>2</sup> -event) = $CS \times CF \times AF \times ABS-d$

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Dermal (continued)	Resident (continued)	Adult (continued)	Soil at Site 2	CS	Chemical Concentration in Soil	See Table 3.3	mg/kg	See Table 3.3	DAD (mg/kg-day) =
				CF	Conversion Factor	1E-06	kg/mg	--	DA-event x EF x ED x EV x SA X 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	5,700	cm <sup>2</sup>	EPA, 2001	where
				AF	Soil to Skin Adherence Factor	0.07	mg/cm <sup>2</sup> -event	EPA, 2001	DA-event (mg/cm <sup>2</sup> -event) =
				ABS-d	Dermal Absorption Factor	chemical-specific	unitless	EPA, 2001	CS x CF x AF x ABS-d
				EV	Event Frequency	1	events/day	EPA, 2001	
				EF	Exposure Frequency	350	days/year	EPA, 2001	
				ED	Exposure Duration	24	years	EPA, 1991	
				BW	Body Weight	70	kg	EPA, 2001	
				AT-C	Averaging Time - Cancer	25,550	days	EPA, 2001	
				AT-N	Averaging Time - Non-Cancer	8,760	days	EPA, 2001	
		Child	Soil at Site 1	CS	Chemical Concentration in Soil	See Table 3.3	mg/kg	See Table 3.3	DAD (mg/kg-day) =
		CF	Conversion Factor	1E-06	kg/mg	--	DA-event x EF x ED x EV x SA X 1/BW x 1/AT		
		SA	Skin Surface Area Available for Contact	2,800	cm <sup>2</sup>	EPA, 2001	where		
		AF	Soil to Skin Adherence Factor	0.2	mg/cm <sup>2</sup> -event	EPA, 2001	DA-event (mg/cm <sup>2</sup> -event) =		
		ABS-d	Dermal Absorption Factor	chemical-specific	unitless	EPA, 2001	CS x CF x AF x ABS-d		
		EV	Event Frequency	1	events/day	EPA, 2001			
		EF	Exposure Frequency	350	days/year	EPA, 2001			
		ED	Exposure Duration	6	years	EPA, 2001			
		BW	Body Weight	15	kg	EPA, 2001			
		AT-C	Averaging Time - Cancer	25,550	days	EPA, 2001			
		AT-N	Averaging Time - Non-Cancer	2,190	days	EPA, 2001			

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Dermal (continued)	Resident (continued)	Child (continued)	Soil at Site 2	CS CF SA AF ABS-d EV EF ED BW AT-C AT-N	Chemical Concentration in Soil Conversion Factor Skin Surface Area Available for Contact Soil to Skin Adherence Factor Dermal Absorption Factor Event Frequency Exposure Frequency Exposure Duration Body Weight Averaging Time - Cancer Averaging Time - Non-Cancer	See Table 3.3 1E-06 2,800 0.2 chemical-specific 1 350 6 15 25,550 2,190	mg/kg kg/mg cm <sup>2</sup> mg/cm <sup>2</sup> -event unitless events/day days/year years kg days	See Table 3.3 -- EPA, 2001 EPA, 2001 EPA, 2001 EPA, 2001 EPA, 2001 EPA, 2001 EPA, 2001 EPA, 2001 EPA, 2001	DAD (mg/kg-day) = DA-event x EF x ED x EV x SA X 1/BW X 1/AT where DA-event (mg/cm <sup>2</sup> -event) = CS x CF x AF x ABS-d

EPA 1989: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual, Part A. OERR EPA/540/1-89/002.

EPA 1991: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual - Supplemental Guidance, Standard Default Exposure Factors. Interim Final. OSWER 9285.6-03.

EPA 1995: Assessing Dermal Exposure from Soil, Technical Guidance Manual, Region III, EPA/903-K-95-003.

EPA 1997: Exposure Factors Handbook, Volume 1. EPA/600/P-95/002Fa.

EPA 2001: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim.